

**Appendix I: HACR1
Baseline Methodology
IMPROVE Site Relocation for
Haleakala National Park**

HACR1 Baseline Methodology

Baseline visibility conditions for the HACR1 monitor at Haleakala NP were reestablished pursuant to EPA’s April 13, 2020 letter, Recommendation for the Use of Patched and Substituted Data and Clarification of Data Completeness for Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Program. Procedures on page 26 of Hawaii’s 2017 progress report were followed to reestablish a baseline with data from the WRAP TSS. IMPROVE data from the TSS was updated using criteria from EPA’s April 13, 2020 letter.

Baseline data from 2000-2004 and additional data over the first 2005-2009 progress period were available for the HALE monitor. However, visibility data for the HACR1 monitor was only available in the first progress period since this monitor started in 2007. Averages for the 2000-2004 baseline were determined with visibility data from 2001-2004 for the HALE1 monitoring station since 2000 data was not representative and available for use. For HACR1, data for the 2005-2009 progress period was from 2007 through 2009 because the visibility monitor started operating in 2007. Progress period (2005-2009) to baseline (2000-2004) ratios for each haze species and haze index (HI) were determined as follows:

$$\frac{\text{HACR1 Progress Period}}{\text{HALE} \frac{\text{Progress}}{\text{Baseline}} \text{Average}} = \text{HACR1 Baseline Period Estimate}$$

The table below shows light extinction averages and the progress period to baseline ratios from IMPROVE data collected at the HALE1 station.

HALE1 Averages and Ratios				
Species	Days	HALE1 2000-2004 Baseline Period b_{ext} (Mm^{-1})	HALE1 2005-2009 Progress Period b_{ext} (Mm^{-1})	HALE1 Progress/Baseline Scaling Ratio
Ammonium Sulfate	Clearest Days	2.1653	2.0886	0.9646
	Haziest Days	17.5323	26.4876	1.5108
	Most Impaired Days	18.3698	27.1418	1.4775
Ammonium Nitrate	Clearest Days	0.5570	0.4298	0.7716
	Haziest Days	2.6635	2.1132	0.7934
	Most Impaired Days	2.1553	1.6754	0.7774
Organic Mass	Clearest Days	0.6715	0.52	0.7744
	Haziest Days	2.8905	2.4848	0.8596
	Most Impaired Days	2.0780	1.547	0.7445
Elemental Carbon	Clearest Days	0.2040	0.165	0.8088
	Haziest Days	1.3953	1.2168	0.8721
	Most Impaired Days	1.0923	0.9246	0.8465

Soil	Clearest Days	0.0998	0.0896	0.8982
	Haziest Days	0.3490	0.373	1.0688
	Most Impaired Days	0.2593	0.2942	1.1348
Coarse Mass	Clearest Days	1.0435	0.864	0.8280
	Haziest Days	2.6280	1.9114	0.7273
	Most Impaired Days	2.0708	1.545	0.7461
Sea Salt	Clearest Days	1.0870	1.5076	1.3869
	Haziest Days	1.2878	1.9816	1.5388
	Most Impaired Days	0.5408	1.1304	2.0904

The table below provides the baseline haze index estimates for the HACR1 monitor. The baseline haze index was determined by scaling each HACR1 haze species for each of the clearest and most impaired days from 2007 to 2009 by the HALE1 scaling ratio in the table above, summing the scaled b_{ext} for each species for each day, and calculating the haze index from the summed b_{ext} values, including a value of 9 Mm^{-1} for Rayleigh scattering, using the deciview equation (i.e., $dv = 10\ln(b_{ext}/10)$). Spreadsheet calculations are shown on the following pages of this appendix.

HACR1 Baseline HI (dv) Estimates				
Days	HACR1 2000-2004 HI (dv) Estimate Over 2005-2009 Progress Period			HACR1 Average 2000-2004 Baseline HI (dv) Estimate
	2007	2008	2009	
Clearest Days	0.933	0.639	1.436	1.0027
Haziest Days	8.476	10.220	9.549	9.4150
Most Impaired Days	6.717	9.753	8.664	8.3780

**Spreadsheet Calculations
HACR1 Baseline Adjustment
Tables for Clearest Days
(2007-2009)**

BASELINE ADJUSTMENT 2007 CLEAREST DAYS

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007
Julian Day	54	69	72	108	159	195	201	207	225	231	243	255	261	267	273
Adj dv	1.292	0.184	1.709	1.487	1.625	0.427	0.821	1.347	1.201	0.758	0.271	1.409	0.633	0.574	1.286
AmmNO ₃ Scale	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772
Adj AmmNO ₃	0.171	0.148	0.266	0.279	0.380	0.096	0.052	0.416	0.242	0.031	0.122	0.525	0.168	0.228	0.320
AmmNO ₃	0.132	0.114	0.205	0.215	0.293	0.074	0.040	0.321	0.187	0.024	0.094	0.405	0.130	0.176	0.247
AmmSO ₄ Scale	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Adj AmmSO ₄	0.505	0.279	1.515	0.796	1.294	1.129	1.422	1.572	0.852	1.484	0.497	1.023	0.686	0.748	1.392
AmmSO ₄	0.487	0.269	1.461	0.768	1.248	1.089	1.372	1.516	0.822	1.431	0.479	0.987	0.662	0.722	1.343
CM Scale	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828
Adj CM	0.120	0.181	0.393	0.249	0.389	0.146	0.254	0.163	0.321	0.168	0.464	0.540	0.321	0.339	0.344
CM	0.099	0.150	0.325	0.206	0.322	0.121	0.210	0.135	0.266	0.139	0.384	0.447	0.266	0.281	0.285
EC Scale	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809
Adj EC	0.113	0.000	0.053	0.000	0.067	0.000	0.000	0.000	0.122	0.000	0.088	0.000	0.000	0.000	0.082
EC	0.091		0.043		0.054				0.099		0.071				0.066
POM Scale	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774
Adj POM	1.222	0.451	0.465	0.855	0.289	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
POM	0.946	0.349	0.360	0.662	0.224										
Sea Salt Scale	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387
Adj Sea Salt	0.184	0.107	0.057	0.363	0.145	0.001	0.075	0.213	0.698	0.061	0.097	0.389	0.465	0.229	0.184
Sea Salt	0.255	0.149	0.079	0.504	0.201	0.001	0.104	0.295	0.968	0.085	0.134	0.540	0.645	0.317	0.255
Soil Scale	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898
Adj Soil	0.066	0.020	0.116	0.061	0.202	0.065	0.052	0.079	0.040	0.043	0.008	0.036	0.012	0.047	0.050
Soil	0.059	0.018	0.104	0.055	0.181	0.058	0.047	0.071	0.036	0.039	0.007	0.032	0.011	0.042	0.045
Rayleigh	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9

BASELINE ADJUSTMENT 2007 CLEAREST DAYS (CONTINUOUS)

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2007	2007	2007	2007	2007	2007
Julian Day	279	285	312	327	336	357
Adj dv	0.749	0.681	1.568	1.391	-0.296	0.472
AmmNO ₃ Scale	0.772	0.772	0.772	0.772	0.772	0.772
Adj AmmNO ₃	0.170	0.170	0.257	0.306	0.027	0.298
AmmNO ₃	0.131	0.131	0.198	0.236	0.021	0.230
AmmSO ₄ Scale	0.965	0.965	0.965	0.965	0.965	0.965
Adj AmmSO ₄	0.968	0.682	1.815	1.244	0.479	0.750
AmmSO ₄	0.934	0.658	1.751	1.200	0.462	0.723
CM Scale	0.828	0.828	0.828	0.828	0.828	0.828
Adj CM	0.228	0.256	0.374	0.424	0.128	0.115
CM	0.189	0.212	0.310	0.351	0.106	0.095
EC Scale	0.809	0.809	0.809	0.809	0.809	0.809
Adj EC	0.036	0.141	0.026	0.033	0.000	0.000
EC	0.029	0.114	0.021	0.027		
POM Scale	0.774	0.774	0.774	0.774	0.774	0.774
Adj POM	0.000	0.251	0.000	0.000	0.000	0.000
POM		0.194				
Sea Salt Scale	1.387	1.387	1.387	1.387	1.387	1.387
Adj Sea Salt	0.355	0.172	0.209	0.384	0.069	0.303
Sea Salt	0.492	0.238	0.290	0.532	0.096	0.420
Soil Scale	0.898	0.898	0.898	0.898	0.898	0.898
Adj Soil	0.021	0.033	0.017	0.101	0.004	0.018
Soil	0.019	0.030	0.015	0.091	0.004	0.016
Rayleigh	9	9	9	9	9	9

Average Adjusted dv / Light Extinction
0.933
0.222
1.006
0.282
0.036
0.168
0.227
0.052

BASELINE ADJUSTMENT 2008 CLEAREST DAYS

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008
Julian Day	1	4	25	28	31	34	37	40	97	175	205	220	223	232	235
Adj dv	0.355	-0.143	1.722	0.785	-0.572	0.643	0.458	0.307	0.851	0.733	0.332	1.661	1.161	0.424	0.905
AmmNO ₃ Scale	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772
Adj AmmNO ₃	0.102	0.064	0.211	0.148	0.030	0.131	0.171	0.034	0.162	0.073	0.000	0.226	0.140	0.000	0.135
AmmNO ₃	0.079	0.049	0.163	0.114	0.023	0.101	0.132	0.026	0.125	0.056		0.174	0.108		0.104
AmmSO ₄ Scale	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Adj AmmSO ₄	0.659	0.446	0.840	0.528	0.222	1.339	1.079	0.524	1.047	1.267	1.214	1.989	1.012	0.921	0.973
AmmSO ₄	0.636	0.430	0.810	0.509	0.214	1.292	1.041	0.505	1.010	1.222	1.171	1.919	0.976	0.888	0.939
CM Scale	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828
Adj CM	0.421	0.277	1.066	0.403	0.046	0.128	0.047	0.000	0.198	0.240	0.035	0.287	0.355	0.252	0.263
CM	0.349	0.229	0.883	0.334	0.038	0.106	0.039		0.164	0.199	0.029	0.238	0.294	0.209	0.218
EC Scale	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809
Adj EC	0.000	0.002	0.057	0.000	0.000	0.000	0.000	0.114	0.068	0.000	0.000	0.000	0.077	0.077	0.000
EC		0.002	0.046					0.092	0.055				0.062	0.062	
POM Scale	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774
Adj POM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.433	0.000	0.000	0.000	0.065	0.000	0.000	0.000
POM								0.335				0.050			
Sea Salt Scale	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387
Adj Sea Salt	0.155	0.011	0.273	0.673	0.142	0.061	0.158	0.141	0.231	0.110	0.057	0.200	0.605	0.157	0.550
Sea Salt	0.215	0.015	0.378	0.933	0.197	0.085	0.219	0.195	0.321	0.152	0.079	0.278	0.839	0.218	0.763
Soil Scale	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898
Adj Soil	0.023	0.059	0.432	0.065	0.004	0.004	0.013	0.068	0.181	0.071	0.031	0.039	0.042	0.027	0.026
Soil	0.021	0.053	0.388	0.058	0.004	0.004	0.012	0.061	0.163	0.064	0.028	0.035	0.038	0.024	0.023
Rayleigh	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9

BASELINE ADJUSTMENT 2008 CLEAREST DAYS (CONTINUOUS)

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2008	2008	2008	2008	2008	2008	2008	2008	2008
Julian Day	238	298	313	316	334	340	346	358	361
Adj dv	0.964	0.807	0.519	0.965	1.485	0.536	0.671	-0.697	0.454
AmmNO ₃ Scale	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772
Adj AmmNO ₃	0.023	0.254	0.035	0.060	0.158	0.039	0.026	0.000	0.027
AmmNO ₃	0.018	0.196	0.027	0.046	0.122	0.030	0.020		0.021
AmmSO ₄ Scale	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Adj AmmSO ₄	1.544	1.020	1.027	1.510	1.925	1.220	0.818	0.267	0.600
AmmSO ₄	1.489	0.984	0.991	1.457	1.857	1.177	0.789	0.258	0.579
CM Scale	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828
Adj CM	0.174	0.428	0.205	0.219	0.289	0.238	0.389	0.025	0.000
CM	0.144	0.354	0.170	0.181	0.239	0.197	0.322	0.021	
EC Scale	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809
Adj EC	0.000	0.035	0.063	0.000	0.000	0.000	0.105	0.002	0.000
EC		0.028	0.051				0.085	0.002	
POM Scale	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774
Adj POM	0.000	0.000	0.000	0.000	0.000	0.000	0.287	0.009	0.000
POM							0.222	0.007	
Sea Salt Scale	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387
Adj Sea Salt	0.197	0.045	0.169	0.190	0.151	0.024	0.043	0.012	0.227
Sea Salt	0.273	0.063	0.235	0.263	0.210	0.033	0.059	0.017	0.315
Soil Scale	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898	0.898
Adj Soil	0.075	0.059	0.032	0.035	0.078	0.030	0.027	0.010	0.610
Soil	0.067	0.053	0.029	0.031	0.070	0.027	0.024	0.009	0.548
Rayleigh	9	9	9	9	9	9	9	9	9

Average Adjusted dv / Light Extinction
0.639
0.094
1.000
0.249
0.025
0.033
0.191
0.085

BASELINE ADJUSTMENT 2009 CLEAREST DAYS

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009
Julian Day	4	7	16	22	34	49	67	91	121	157	160	169	196	223	238
Adj dv	1.734	1.671	1.281	1.874	-0.218	1.515	1.536	2.128	1.573	1.636	1.936	1.782	1.758	-0.407	1.714
AmmNO ₃ Scale	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772
Adj AmmNO ₃	0.499	0.533	0.048	0.228	0.135	0.092	0.000	0.442	0.288	0.187	0.294	0.192	0.373	0.000	0.215
AmmNO ₃	0.385	0.411	0.037	0.176	0.104	0.071		0.341	0.222	0.144	0.227	0.148	0.288		0.166
AmmSO ₄ Scale	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Adj AmmSO ₄	1.482	1.494	0.614	1.241	0.419	1.305	1.809	1.388	1.155	1.033	1.466	1.063	1.529	0.324	1.605
AmmSO ₄	1.430	1.441	0.592	1.197	0.404	1.259	1.745	1.339	1.114	0.996	1.414	1.025	1.475	0.313	1.548
CM Scale	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828
Adj CM	0.234	0.278	0.472	0.742	0.058	0.568	0.590	0.660	0.639	0.586	1.025	1.218	0.604	0.222	0.656
CM	0.194	0.230	0.391	0.614	0.048	0.470	0.488	0.546	0.529	0.485	0.848	1.008	0.500	0.184	0.543
EC Scale	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809
Adj EC	0.000	0.184	0.668	0.216	0.000	0.141	0.163	0.066	0.208	0.000	0.000	0.000	0.000	0.000	0.064
EC		0.149	0.540	0.175		0.114	0.132	0.053	0.168						0.052
POM Scale	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774
Adj POM	0.346	0.230	0.343	0.098	0.000	0.000	0.059	0.000	0.000	0.478	0.000	0.000	0.000	0.000	0.000
POM	0.268	0.178	0.266	0.076			0.046			0.370					
Sea Salt Scale	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387
Adj Sea Salt	0.304	0.078	0.198	0.221	0.143	0.084	0.001	0.655	0.177	0.252	0.073	0.270	0.368	0.012	0.290
Sea Salt	0.421	0.108	0.275	0.306	0.199	0.117	0.001	0.909	0.246	0.349	0.101	0.374	0.511	0.017	0.402
Soil Scale	0.898	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Adj Soil	0.028	0.022	0.023	0.316	0.029	0.446	0.038	0.160	0.237	0.243	0.279	0.209	0.047	0.042	0.039
Soil	0.025	0.020	0.021	0.284	0.026	0.401	0.034	0.144	0.213	0.219	0.251	0.188	0.042	0.038	0.035
Rayleigh	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9

BASELINE ADJUSTMENT 2009 CLEAREST DAYS (CONTINUOUS)

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2009	2009	2009	2009	2009	2009	2009	2009	2009
Julian Day	262	286	289	295	307	322	331	334	343
Adj dv	2.165	0.813	1.997	1.386	-0.088	1.876	1.554	1.208	2.035
AmmNO ₃ Scale	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772	0.772
Adj AmmNO ₃	0.183	0.231	0.369	0.119	0.043	0.154	0.302	0.377	0.443
AmmNO ₃	0.141	0.178	0.285	0.092	0.033	0.119	0.233	0.291	0.342
AmmSO ₄ Scale	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Adj AmSO ₄	1.877	0.824	1.464	1.474	0.453	1.605	0.994	0.761	1.676
AmmSO ₄	1.811	0.795	1.412	1.422	0.437	1.548	0.959	0.734	1.617
CM Scale	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828
Adj CM	0.783	0.594	0.991	0.487	0.255	0.752	0.685	0.546	0.847
CM	0.648	0.492	0.820	0.403	0.211	0.622	0.567	0.452	0.701
EC Scale	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809	0.809
Adj EC	0.125	0.000	0.163	0.030	0.000	0.014	0.032	0.048	0.042
EC	0.101		0.132	0.024		0.011	0.026	0.039	0.034
POM Scale	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774	0.774
Adj POM	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
POM									
Sea Salt Scale	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387	1.387
Adj Sea Salt	0.384	0.131	0.139	0.365	0.141	0.480	0.655	0.520	0.202
Sea Salt	0.533	0.181	0.193	0.506	0.195	0.666	0.909	0.721	0.280
Soil Scale	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Adj Soil	0.064	0.067	0.084	0.012	0.021	0.059	0.012	0.031	0.047
Soil	0.058	0.060	0.076	0.011	0.019	0.053	0.011	0.028	0.042
Rayleigh	9	9	9	9	9	9	9	9	9

Average Adjusted dv / Light Extinction
1.436
0.239
1.211
0.604
0.090
0.065
0.256
0.106

**Spreadsheet Calculations
HACR1 Baseline Adjustment
Tables for Haziest Days
(2007-2009)**

BASELINE ADJUSTMENT 2007 HAZIEST DAYS

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007
Julian Day	24	30	45	60	63	66	87	96	120	123	135	138	141	171	177
Adj dv	22.549	8.321	7.105	6.906	7.077	5.428	8.590	12.828	7.009	9.612	9.379	6.522	11.097	7.493	7.194
AmmNO ₃ Scale	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793
Adj AmmNO ₃	3.697	0.236	2.596	2.712	0.731	0.552	1.259	3.011	1.811	2.884	3.256	1.250	1.226	1.446	2.654
AmmNO ₃	2.933	0.187	2.060	2.152	0.580	0.438	0.999	2.389	1.437	2.288	2.583	0.992	0.973	1.147	2.106
AmmSO ₄ Scale	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511
Adj AmmSO ₄	2.317	0.893	3.546	3.306	7.686	5.492	9.813	7.951	2.814	3.263	6.634	5.751	16.117	2.638	4.174
AmmSO ₄	3.500	1.349	5.358	4.995	11.612	8.297	14.825	12.012	4.252	4.929	10.022	8.688	24.350	3.986	6.306
CM Scale	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727
Adj CM	2.003	7.056	1.281	1.664	0.760	0.968	0.573	2.706	2.497	4.745	2.713	0.962	1.196	5.186	2.131
CM	1.457	5.132	0.932	1.210	0.553	0.704	0.417	1.968	1.816	3.451	1.973	0.700	0.870	3.772	1.550
EC Scale	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872
Adj EC	8.895	0.533	0.242	0.453	0.640	0.378	1.202	4.223	0.287	0.443	0.646	0.652	0.910	0.510	0.560
EC	7.757	0.465	0.211	0.395	0.558	0.330	1.048	3.683	0.250	0.386	0.563	0.569	0.794	0.445	0.488
POM Scale	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860
Adj POM	68.783	4.311	2.250	1.321	1.141	0.512	1.481	6.689	1.653	1.719	1.910	1.080	1.455	1.683	0.943
POM	59.129	3.706	1.934	1.136	0.981	0.440	1.273	5.750	1.421	1.478	1.642	0.928	1.251	1.447	0.811
Sea Salt Scale	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539
Adj Sea Salt	0.473	0.408	1.287	1.426	0.166	0.131	0.188	0.819	0.341	0.668	0.528	0.266	0.266	0.385	0.802
Sea Salt	0.728	0.628	1.980	2.194	0.255	0.202	0.289	1.260	0.525	1.028	0.812	0.409	0.410	0.593	1.234
Soil Scale	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069
Adj Soil	0.181	0.545	0.147	0.067	0.168	0.174	0.094	1.668	1.752	3.426	0.860	0.237	0.162	0.306	0.269
Soil	0.193	0.583	0.157	0.072	0.180	0.186	0.100	1.783	1.873	3.662	0.919	0.253	0.173	0.327	0.287
Rayleigh	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9

BASELINE ADJUSTMENT 2007 HAZIEST DAYS (CONTINUOUS)

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2007	2007	2007	2007	2007	2007	2007
Julian Day	192	249	294	300	303	306	330
Adj dv	5.549	5.650	9.709	6.099	7.475	9.103	5.782
AmmNO ₃ Scale	0.793	0.793	0.793	0.793	0.793	0.793	0.793
Adj AmmNO ₃	0.309	1.228	0.824	1.398	1.218	1.148	0.674
AmmNO ₃	0.245	0.974	0.654	1.109	0.966	0.911	0.535
AmmSO ₄ Scale	1.511	1.511	1.511	1.511	1.511	1.511	1.511
Adj AmmSO ₄	5.942	3.682	14.420	2.184	5.925	11.328	5.755
AmmSO ₄	8.977	5.562	21.785	3.299	8.952	17.114	8.694
CM Scale	0.727	0.727	0.727	0.727	0.727	0.727	0.727
Adj CM	1.259	1.133	1.207	0.671	1.900	0.671	0.377
CM	0.916	0.824	0.878	0.488	1.382	0.488	0.274
EC Scale	0.872	0.872	0.872	0.872	0.872	0.872	0.872
Adj EC	0.280	0.677	0.187	0.398	0.241	0.471	0.671
EC	0.244	0.590	0.163	0.347	0.210	0.411	0.585
POM Scale	0.860	0.860	0.860	0.860	0.860	0.860	0.860
Adj POM	0.316	1.356	0.126	1.518	0.854	1.883	1.107
POM	0.272	1.166	0.108	1.305	0.734	1.619	0.952
Sea Salt Scale	1.539	1.539	1.539	1.539	1.539	1.539	1.539
Adj Sea Salt	0.090	0.431	0.485	2.943	1.880	0.309	0.164
Sea Salt	0.138	0.663	0.746	4.529	2.893	0.476	0.253
Soil Scale	1.069	1.069	1.069	1.069	1.069	1.069	1.069
Adj Soil	0.221	0.089	0.155	0.291	0.099	0.039	0.080
Soil	0.236	0.095	0.166	0.311	0.106	0.042	0.086
Rayleigh	9	9	9	9	9	9	9

Average Adjusted dv / Light Extinction
8.476
1.642
5.983
1.985
1.068
4.732
0.657
0.501

BASELINE ADJUSTMENT 2008 HAZIEST DAYS

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008
Julian Day	10	16	49	58	70	100	106	109	115	118	133	136	142	148	178
Adj dv	9.408	8.371	6.677	14.020	6.979	10.408	8.129	10.788	15.554	12.445	9.928	16.826	8.351	7.440	6.944
AmmNO ₃ Scale	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793
Adj AmmNO ₃	1.878	0.949	0.435	0.964	0.566	0.161	3.014	2.037	1.521	0.940	2.535	1.307	1.691	2.077	0.342
AmmNO ₃	1.490	0.753	0.345	0.765	0.449	0.128	2.391	1.616	1.207	0.746	2.011	1.037	1.342	1.648	0.271
AmmSO ₄ Scale	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511
Adj AmmSO ₄	10.357	10.044	7.555	22.965	8.439	17.399	5.722	13.677	33.194	21.861	6.791	38.181	7.610	5.123	7.294
AmmSO ₄	15.647	15.175	11.414	34.696	12.750	26.286	8.645	20.663	50.149	33.028	10.260	57.684	11.497	7.740	11.019
CM Scale	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727
Adj CM	2.264	1.690	0.681	1.548	0.902	0.675	2.285	2.212	2.549	1.445	4.037	3.352	2.398	2.029	1.735
CM	1.647	1.229	0.495	1.126	0.656	0.491	1.662	1.609	1.854	1.051	2.936	2.438	1.744	1.476	1.262
EC Scale	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872
Adj EC	0.212	0.334	0.739	1.005	0.293	0.804	0.245	0.260	0.302	0.640	0.163	0.087	0.175	0.513	0.632
EC	0.349	0.411	0.366	1.132	0.192	0.395	0.407	0.419	0.560	0.673	0.480	0.213	0.306	0.757	0.797
POM Scale	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860
Adj POM	0.909	0.492	0.751	4.690	0.543	0.176	0.754	0.647	0.342	0.347	1.513	0.000	0.865	1.771	0.615
POM	0.781	0.423	0.646	4.032	0.467	0.151	0.648	0.556	0.294	0.298	1.301		0.744	1.522	0.529
Sea Salt Scale	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539
Adj Sea Salt	0.884	0.489	0.318	0.283	0.231	0.082	1.194	1.443	0.235	0.290	0.886	0.263	0.317	0.203	0.224
Sea Salt	1.361	0.753	0.490	0.436	0.355	0.126	1.838	2.220	0.361	0.447	1.363	0.405	0.488	0.312	0.344
Soil Scale	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069
Adj Soil	0.116	0.096	0.019	0.177	0.121	0.019	0.330	0.136	0.228	0.189	2.063	1.602	0.994	0.328	0.184
Soil	0.124	0.103	0.020	0.189	0.129	0.020	0.353	0.145	0.244	0.202	2.205	1.712	1.062	0.351	0.197
Rayleigh	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9

BASELINE ADJUSTMENT 2008 HAZIEST DAYS (CONTINUOUS)

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008
Julian Day	181	196	259	289	292	295	301	319	325	337
Adj dv	10.101	7.841	10.498	15.397	7.141	9.062	7.853	16.687	8.564	10.087
AmmNO ₃ Scale	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793
Adj AmmNO ₃	1.332	0.664	0.286	0.764	1.975	0.812	0.957	1.375	2.555	0.229
AmmNO ₃	1.057	0.527	0.227	0.606	1.567	0.644	0.759	1.091	2.027	0.182
AmmSO ₄ Scale	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511
Adj AmmSO ₄	12.838	8.746	17.085	33.149	3.995	12.304	10.330	40.954	5.222	17.519
AmmSO ₄	19.396	13.214	25.812	50.082	6.036	18.589	15.606	61.873	7.889	26.468
CM Scale	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727
Adj CM	2.208	2.182	0.282	1.521	1.312	0.745	1.042	0.936	0.337	0.271
CM	1.606	1.587	0.205	1.106	0.954	0.542	0.758	0.681	0.245	0.197
EC Scale	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872
Adj EC	0.172	0.259	1.893	0.877	0.737	1.218	0.359	0.129	3.114	0.234
EC	0.277	0.411	0.388	0.970	0.703	0.660	0.272	0.088	0.763	0.046
POM Scale	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860
Adj POM	0.768	0.922	0.000	0.919	1.975	0.506	0.036	0.098	1.776	0.000
POM	0.660	0.793		0.790	1.698	0.435	0.031	0.084	1.527	
Sea Salt Scale	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539
Adj Sea Salt	0.374	0.001	0.001	0.001	1.267	0.001	0.001	0.110	0.472	0.156
Sea Salt	0.576	0.002	0.002	0.002	1.949	0.002	0.001	0.169	0.727	0.240
Soil Scale	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069
Adj Soil	0.764	0.130	0.023	0.400	0.162	0.162	0.207	0.451	1.071	0.012
Soil	0.817	0.139	0.025	0.428	0.173	0.173	0.221	0.482	1.145	0.013
Rayleigh	9	9	9	9	9	9	9	9	9	9

Average Adjusted dv / Light Extinction
10.220
1.255
15.134
1.626
0.616
0.857
0.389
0.399

BASELINE ADJUSTMENT 2009 HAZIEST DAYS

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009
Julian Day	1	10	82	109	112	115	124	127	133	136	148	151	154	163	166
Adj dv	6.966	7.053	7.926	17.010	7.112	9.177	11.965	13.257	8.045	18.750	10.756	6.755	7.573	9.234	7.578
AmmNO ₃ Scale	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793
Adj AmmNO ₃	0.422	0.581	3.203	0.342	0.737	0.889	0.687	2.314	1.787	1.000	0.311	0.653	0.968	2.007	1.841
AmmNO ₃	0.335	0.461	2.541	0.271	0.585	0.705	0.545	1.836	1.418	0.793	0.247	0.518	0.768	1.592	1.461
AmmSO ₄ Scale	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511
Adj AmmSO ₄	10.095	9.673	3.684	38.353	7.403	11.534	18.540	17.865	4.069	45.754	16.339	6.312	3.965	6.291	5.582
AmmSO ₄	15.252	14.614	5.566	57.943	11.184	17.425	28.010	26.991	6.147	69.125	24.685	9.536	5.991	9.505	8.434
CM Scale	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727
Adj CM	0.517	0.686	3.221	4.719	2.175	2.369	4.066	6.012	4.357	6.197	2.557	2.080	2.560	4.308	3.648
CM	0.376	0.499	2.343	3.432	1.582	1.723	2.957	4.373	3.169	4.507	1.860	1.513	1.862	3.133	2.653
EC Scale	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872
Adj EC	0.023	0.140	0.511	0.742	0.054	0.359	0.233	0.741	0.737	1.053	0.355	0.380	1.054	0.821	0.341
EC	0.020	0.122	0.446	0.647	0.047	0.313	0.203	0.646	0.643	0.918	0.310	0.331	0.919	0.716	0.297
POM Scale	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860
Adj POM	0.000	0.000	1.029	1.021	0.419	0.000	0.105	1.097	1.063	1.647	0.508	0.856	3.050	1.782	0.000
POM			0.885	0.878	0.360		0.090	0.943	0.914	1.416	0.437	0.736	2.622	1.532	
Sea Salt Scale	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539
Adj Sea Salt	0.001	0.148	1.202	0.173	0.235	0.076	0.001	0.091	1.009	0.001	0.001	0.156	0.409	0.647	0.494
Sea Salt	0.001	0.227	1.849	0.266	0.362	0.117	0.002	0.140	1.553	0.002	0.002	0.240	0.629	0.995	0.760
Soil Scale	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069
Adj Soil	0.011	0.018	0.240	0.447	0.341	0.810	0.454	0.527	0.333	0.554	0.245	0.213	0.318	0.323	0.429
Soil	0.012	0.019	0.257	0.478	0.364	0.866	0.485	0.563	0.356	0.592	0.262	0.228	0.340	0.345	0.459

BASELINE ADJUSTMENT 2009 HAZIEST DAYS (CONTINUOUS)

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	Average Adjusted dv / Light Extinction
Year	2009	2009	2009	2009	2009	2009	2009	2009	2009	
Julian Day	184	202	214	220	226	253	271	280	301	
Adj dv	7.019	7.982	10.505	8.106	8.870	8.960	7.705	11.108	9.769	9.549
AmmNO ₃ Scale	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	0.793	
Adj AmmNO ₃	0.616	2.215	2.019	1.886	0.744	0.700	2.004	1.264	1.244	1.268
AmmNO ₃	0.489	1.757	1.602	1.496	0.590	0.555	1.590	1.003	0.987	
AmmSO ₄ Scale	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	1.511	
Adj AmmSO ₄	7.817	3.723	9.633	2.707	10.393	9.310	3.683	15.381	11.663	11.657
AmmSO ₄	11.810	5.625	14.553	4.090	15.701	14.065	5.564	23.237	17.620	
CM Scale	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	0.727	
Adj CM	2.124	4.954	4.936	4.158	2.601	2.946	3.436	3.111	3.677	3.392
CM	1.545	3.603	3.590	3.024	1.892	2.143	2.499	2.263	2.674	
EC Scale	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	0.872	
Adj EC	0.502	0.694	0.263	1.597	0.898	1.074	0.630	0.480	0.150	0.576
EC	0.438	0.605	0.229	1.393	0.783	0.937	0.549	0.419	0.131	
POM Scale	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	
Adj POM	0.000	0.441	0.693	1.814	0.515	1.106	1.532	0.644	0.041	0.807
POM		0.379	0.596	1.559	0.443	0.951	1.317	0.554	0.035	
Sea Salt Scale	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	1.539	
Adj Sea Salt	0.001	0.967	0.636	1.021	0.001	0.238	1.152	0.300	0.662	0.401
Sea Salt	0.001	1.488	0.979	1.571	0.001	0.367	1.772	0.461	1.018	
Soil Scale	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	1.069	
Adj Soil	0.116	0.223	1.411	0.310	0.128	0.124	0.173	0.188	0.125	0.336
Soil	0.124	0.238	1.508	0.331	0.137	0.132	0.185	0.201	0.134	

**Spreadsheet Calculations
HACR1 Baseline Adjustment
Tables for Most Impaired Days
(2007-2009)**

BASELINE ADJUSTMENT 2007 MOST IMPAIRED DAYS

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007
Julian Day	63	66	75	87	96	132	135	138	141	177	186	189	192	234	237
Adj dv	7.229	5.518	5.390	8.776	13.107	4.143	9.485	6.643	11.270	7.209	3.690	5.321	5.623	4.790	3.466
AmmNO ₃ Scale	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777
Adj AmmNO ₃	0.746	0.563	0.754	1.285	3.073	0.925	3.323	1.276	1.252	2.709	0.379	1.773	0.315	1.209	0.396
AmmNO ₃	0.580	0.438	0.586	0.999	2.389	0.719	2.583	0.992	0.973	2.106	0.295	1.378	0.245	0.940	0.308
AmmSO ₄ Scale	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478
Adj AmmSO ₄	7.859	5.616	4.294	10.034	8.130	2.961	6.783	5.880	16.481	4.268	3.875	3.262	6.076	3.245	3.777
AmmSO ₄	11.612	8.297	6.345	14.825	12.012	4.375	10.022	8.688	24.350	6.306	5.726	4.820	8.977	4.794	5.581
CM Scale	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746
Adj CM	0.741	0.944	1.230	0.559	2.638	0.555	2.644	0.938	1.166	2.077	0.795	2.187	1.228	1.943	0.555
CM	0.553	0.704	0.918	0.417	1.968	0.414	1.973	0.700	0.870	1.550	0.593	1.632	0.916	1.450	0.414
EC Scale	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847
Adj EC	0.659	0.390	0.338	1.238	4.351	0.156	0.665	0.672	0.938	0.576	0.233	0.035	0.288	0.197	0.364
EC	0.558	0.330	0.286	1.048	3.683	0.132	0.563	0.569	0.794	0.488	0.197	0.030	0.244	0.167	0.308
POM Scale	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745
Adj POM	1.318	0.591	1.068	1.710	7.723	1.144	2.206	1.246	1.680	1.089	0.000	0.085	0.365	0.034	0.000
POM	0.981	0.440	0.795	1.273	5.750	0.852	1.642	0.928	1.251	0.811		0.063	0.272	0.025	
Sea Salt Scale	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090
Adj Sea Salt	0.122	0.097	0.365	0.138	0.603	0.109	0.388	0.196	0.196	0.590	0.065	0.481	0.066	0.376	0.000
Sea Salt	0.255	0.202	0.764	0.289	1.260	0.227	0.812	0.409	0.410	1.234	0.135	1.006	0.138	0.785	0.001
Soil Scale	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135
Adj Soil	0.159	0.164	0.093	0.088	1.571	0.284	0.810	0.223	0.152	0.253	0.116	0.202	0.208	0.141	0.049
Soil	0.180	0.186	0.105	0.100	1.783	0.322	0.919	0.253	0.173	0.287	0.132	0.229	0.236	0.160	0.056
Rayleigh	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9

BASELINE ADJUSTMENT 2007 MOST IMPAIRED DAYS (CONTINUOUS)

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2007	2007	2007	2007	2007	2007	2007
Julian Day	249	294	303	306	309	315	330
Adj dv	5.758	9.785	7.355	9.296	3.266	4.712	5.937
AmmNO ₃ Scale	0.777	0.777	0.777	0.777	0.777	0.777	0.777
Adj AmmNO ₃	1.253	0.841	1.243	1.172	0.683	1.397	0.688
AmmNO ₃	0.974	0.654	0.966	0.911	0.531	1.086	0.535
AmmSO ₄ Scale	1.478	1.478	1.478	1.478	1.478	1.478	1.478
Adj AmmSO ₄	3.764	14.745	6.059	11.583	3.126	3.082	5.884
AmmSO ₄	5.562	21.785	8.952	17.114	4.618	4.554	8.694
CM Scale	0.746	0.746	0.746	0.746	0.746	0.746	0.746
Adj CM	1.104	1.177	1.852	0.654	0.654	1.537	0.367
CM	0.824	0.878	1.382	0.488	0.488	1.147	0.274
EC Scale	0.847	0.847	0.847	0.847	0.847	0.847	0.847
Adj EC	0.697	0.193	0.248	0.486	0.118	0.250	0.691
EC	0.590	0.163	0.210	0.411	0.100	0.212	0.585
POM Scale	0.745	0.745	0.745	0.745	0.745	0.745	0.745
Adj POM	1.566	0.145	0.986	2.175	0.089	0.313	1.279
POM	1.166	0.108	0.734	1.619	0.066	0.233	0.952
Sea Salt Scale	2.090	2.090	2.090	2.090	2.090	2.090	2.090
Adj Sea Salt	0.317	0.357	1.384	0.228	0.182	0.381	0.121
Sea Salt	0.663	0.746	2.893	0.476	0.380	0.797	0.253
Soil Scale	1.135	1.135	1.135	1.135	1.135	1.135	1.135
Adj Soil	0.084	0.146	0.093	0.037	0.011	0.058	0.076
Soil	0.095	0.166	0.106	0.042	0.012	0.066	0.086
Rayleigh	9	9	9	9	9	9	9

Average Adjusted dv / Light Extinction
6.717
1.239
6.399
1.252
0.627
1.219
0.307
0.228

BASELINE ADJUSTMENT 2008 MOST IMPAIRED DAYS

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008
Julian Day	10	16	49	58	70	100	109	115	118	136	142	169	178	181	196
Adj dv	9.453	8.433	6.776	14.296	7.075	10.543	10.790	15.699	12.572	16.944	8.411	6.688	7.020	10.186	7.973
AmmNO ₃ Scale	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777
Adj AmmNO ₃	1.917	0.969	0.444	0.984	0.578	0.165	2.079	1.553	0.960	1.334	1.726	1.213	0.349	1.360	0.678
AmmNO ₃	1.490	0.753	0.345	0.765	0.449	0.128	1.616	1.207	0.746	1.037	1.342	0.943	0.271	1.057	0.527
AmmSO ₄ Scale	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478
Adj AmmSO ₄	10.590	10.271	7.725	23.483	8.629	17.791	13.985	33.942	22.354	39.042	7.781	5.335	7.458	13.128	8.943
AmmSO ₄	15.647	15.175	11.414	34.696	12.750	26.286	20.663	50.149	33.028	57.684	11.497	7.882	11.019	19.396	13.214
CM Scale	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746
Adj CM	2.207	1.647	0.663	1.509	0.879	0.658	2.157	2.485	1.409	3.268	2.337	1.667	1.691	2.153	2.127
CM	1.647	1.229	0.495	1.126	0.656	0.491	1.609	1.854	1.051	2.438	1.744	1.244	1.262	1.606	1.587
EC Scale	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847
Adj EC	0.212	0.334	0.739	1.005	0.293	0.804	0.260	0.302	0.640	0.087	0.175	0.784	0.632	0.172	0.259
EC	0.349	0.411	0.366	1.132	0.192	0.395	0.419	0.560	0.673	0.213	0.306	0.975	0.797	0.277	0.411
POM Scale	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745
Adj POM	1.049	0.568	0.868	5.416	0.627	0.203	0.747	0.395	0.400	0.000	0.999	1.143	0.711	0.887	1.065
POM	0.781	0.423	0.646	4.032	0.467	0.151	0.556	0.294	0.298		0.744	0.851	0.529	0.660	0.793
Sea Salt Scale	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090
Adj Sea Salt	0.651	0.360	0.234	0.209	0.170	0.060	1.062	0.173	0.214	0.194	0.233	0.208	0.165	0.276	0.001
Sea Salt	1.361	0.753	0.490	0.436	0.355	0.126	2.220	0.361	0.447	0.405	0.488	0.434	0.344	0.576	0.002
Soil Scale	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135
Adj Soil	0.109	0.091	0.018	0.167	0.114	0.018	0.128	0.215	0.178	1.509	0.936	0.169	0.174	0.720	0.122
Soil	0.124	0.103	0.020	0.189	0.129	0.020	0.145	0.244	0.202	1.712	1.062	0.192	0.197	0.817	0.139
Rayleigh	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9

BASELINE ADJUSTMENT 2008 MOST IMPAIRED DAYS (CONTINUOUS)

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008
Julian Day	256	259	277	289	295	301	310	319	337	349
Adj dv	5.619	10.631	5.136	15.576	9.200	7.953	4.782	16.853	10.214	5.014
AmmNO ₃ Scale	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777
Adj AmmNO ₃	0.612	0.292	0.376	0.780	0.829	0.976	0.904	1.404	0.234	0.293
AmmNO ₃	0.476	0.227	0.292	0.606	0.644	0.759	0.703	1.091	0.182	0.228
AmmSO ₄ Scale	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478
Adj AmmSO ₄	6.601	17.470	5.446	33.896	12.581	10.562	4.920	41.877	17.914	6.106
AmmSO ₄	9.753	25.812	8.047	50.082	18.589	15.606	7.270	61.873	26.468	9.022
CM Scale	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746
Adj CM	1.052	0.275	1.446	1.483	0.727	1.016	0.587	0.913	0.264	0.534
CM	0.785	0.205	1.079	1.106	0.542	0.758	0.438	0.681	0.197	0.398
EC Scale	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847
Adj EC	0.079	1.893	0.082	0.877	1.218	0.359	0.418	0.129	0.234	0.136
EC	0.062	0.388	0.088	0.970	0.660	0.272	0.183	0.088	0.046	0.054
POM Scale	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745
Adj POM	0.000	0.000	0.113	1.061	0.584	0.042	0.000	0.113	0.000	0.000
POM			0.084	0.790	0.435	0.031		0.084		
Sea Salt Scale	2.089	2.089	2.089	2.089	2.089	2.089	2.089	2.089	2.089	2.089
Adj Sea Salt	0.088	0.001	0.069	0.001	0.001	0.000	0.245	0.081	0.115	0.432
Sea Salt	0.184	0.002	0.145	0.002	0.002	0.001	0.511	0.169	0.240	0.903
Soil Scale	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135
Adj Soil	0.107	0.022	0.181	0.377	0.152	0.195	0.057	0.425	0.011	0.009
Soil	0.121	0.025	0.206	0.428	0.173	0.221	0.065	0.482	0.013	0.010
Rayleigh	9	9	9	9	9	9	9	9	9	9

Average Adjusted dv / Light Extinction
9.753
0.920
15.513
1.406
0.485
0.680
0.210
0.248

BASELINE ADJUSTMENT 2009 MOST IMPAIRED DAYS

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009	2009
Julian Day	1	10	13	37	55	109	112	115	124	127	136	148	151	184	205
Adj dv	7.077	7.140	5.340	5.059	4.987	17.166	7.166	9.242	12.063	13.372	18.924	10.887	6.853	7.090	4.704
AmmNO ₃ Scale	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777
Adj AmmNO ₃	0.431	0.593	0.105	0.893	0.502	0.349	0.753	0.907	0.701	2.362	1.020	0.318	0.666	0.629	0.399
AmmNO ₃	0.335	0.461	0.082	0.694	0.390	0.271	0.585	0.705	0.545	1.836	0.793	0.247	0.518	0.489	0.310
AmmSO ₄ Scale	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478
Adj AmmSO ₄	10.323	9.891	7.015	5.341	5.180	39.217	7.570	11.794	18.958	18.268	46.785	16.707	6.454	7.993	4.941
AmmSO ₄	15.252	14.614	10.364	7.892	7.653	57.943	11.184	17.425	28.010	26.991	69.125	24.685	9.536	11.810	7.300
CM Scale	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746
Adj CM	0.504	0.669	0.253	0.828	0.611	4.600	2.120	2.309	3.963	5.861	6.041	2.493	2.028	2.071	1.279
CM	0.376	0.499	0.189	0.618	0.456	3.432	1.582	1.723	2.957	4.373	4.507	1.860	1.513	1.545	0.954
EC Scale	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847
Adj EC	0.024	0.144	0.203	0.108	0.306	0.764	0.056	0.370	0.240	0.763	1.084	0.366	0.391	0.517	0.152
EC	0.020	0.122	0.172	0.091	0.259	0.647	0.047	0.313	0.203	0.646	0.918	0.310	0.331	0.438	0.129
POM Scale	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745
Adj POM	0.000	0.000	0.177	0.000	0.661	1.179	0.484	0.000	0.121	1.267	1.902	0.587	0.989	0.000	0.000
POM			0.132		0.492	0.878	0.360		0.090	0.943	1.416	0.437	0.736		
Sea Salt Scale	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090
Adj Sea Salt	0.000	0.109	0.204	0.299	0.000	0.127	0.173	0.056	0.001	0.067	0.001	0.001	0.115	0.000	0.097
Sea Salt	0.001	0.227	0.427	0.625	0.001	0.266	0.362	0.117	0.002	0.140	0.002	0.002	0.240	0.001	0.203
Soil Scale	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135
Adj Soil	0.011	0.017	0.099	0.115	0.206	0.421	0.321	0.763	0.427	0.496	0.522	0.231	0.201	0.109	0.139
Soil	0.012	0.019	0.112	0.131	0.234	0.478	0.364	0.866	0.485	0.563	0.592	0.262	0.228	0.124	0.158

BASELINE ADJUSTMENT 2009 MOST IMPAIRED DAYS (CONTINUOUS)

Site Code	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1	HACR1
Year	2009	2009	2009	2009	2009	2009	2009	2009	2009
Julian Day	214	226	253	280	301	316	355	358	361
Adj dv	10.505	8.986	9.075	11.213	9.778	6.138	6.275	4.429	4.646
AmmNO ₃ Scale	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777	0.777
Adj AmmNO ₃	2.061	0.759	0.714	1.290	1.270	0.190	1.200	0.293	0.208
AmmNO ₃	1.602	0.590	0.555	1.003	0.987	0.148	0.933	0.228	0.162
AmmSO ₄ Scale	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478	1.478
Adj AmmSO ₄	9.850	10.627	9.519	15.727	11.926	7.597	6.294	4.862	5.096
AmmSO ₄	14.553	15.701	14.065	23.237	17.620	11.225	9.299	7.184	7.530
CM Scale	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746
Adj CM	4.812	2.536	2.872	3.033	3.584	1.434	1.595	1.188	1.280
CM	3.590	1.892	2.143	2.263	2.674	1.070	1.190	0.886	0.955
EC Scale	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847	0.847
Adj EC	0.271	0.925	1.107	0.495	0.155	0.235	0.274	0.095	0.000
EC	0.229	0.783	0.937	0.419	0.131	0.199	0.232	0.080	
POM Scale	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745	0.745
Adj POM	0.801	0.595	1.277	0.744	0.047	0.000	0.093	0.000	0.000
POM	0.596	0.443	0.951	0.554	0.035		0.069		
Sea Salt Scale	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090	2.090
Adj Sea Salt	0.468	0.000	0.176	0.221	0.487	0.000	0.205	0.088	0.286
Sea Salt	0.979	0.001	0.367	0.461	1.018	0.001	0.428	0.183	0.598
Soil Scale	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135	1.135
Adj Soil	1.329	0.121	0.116	0.177	0.118	0.017	0.069	0.047	0.042
Soil	1.508	0.137	0.132	0.201	0.134	0.019	0.078	0.053	0.048

Average Adjusted dv / Light Extinction
8.664
0.760
12.414
2.415
0.377
0.455
0.133
0.255